Harvesting RDF metadata

Building digital library portals with harvested metadata workshop

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Outline

- Namespaces and application profiles
- SCHEMAS registry
- How to register a schema/application profile?
- Preparing your application profile for registration
- SCHEMAS application profile format
- Conclusions

Namespaces and application profiles

Namespaces:

Declare names and definitions of vocabulary terms

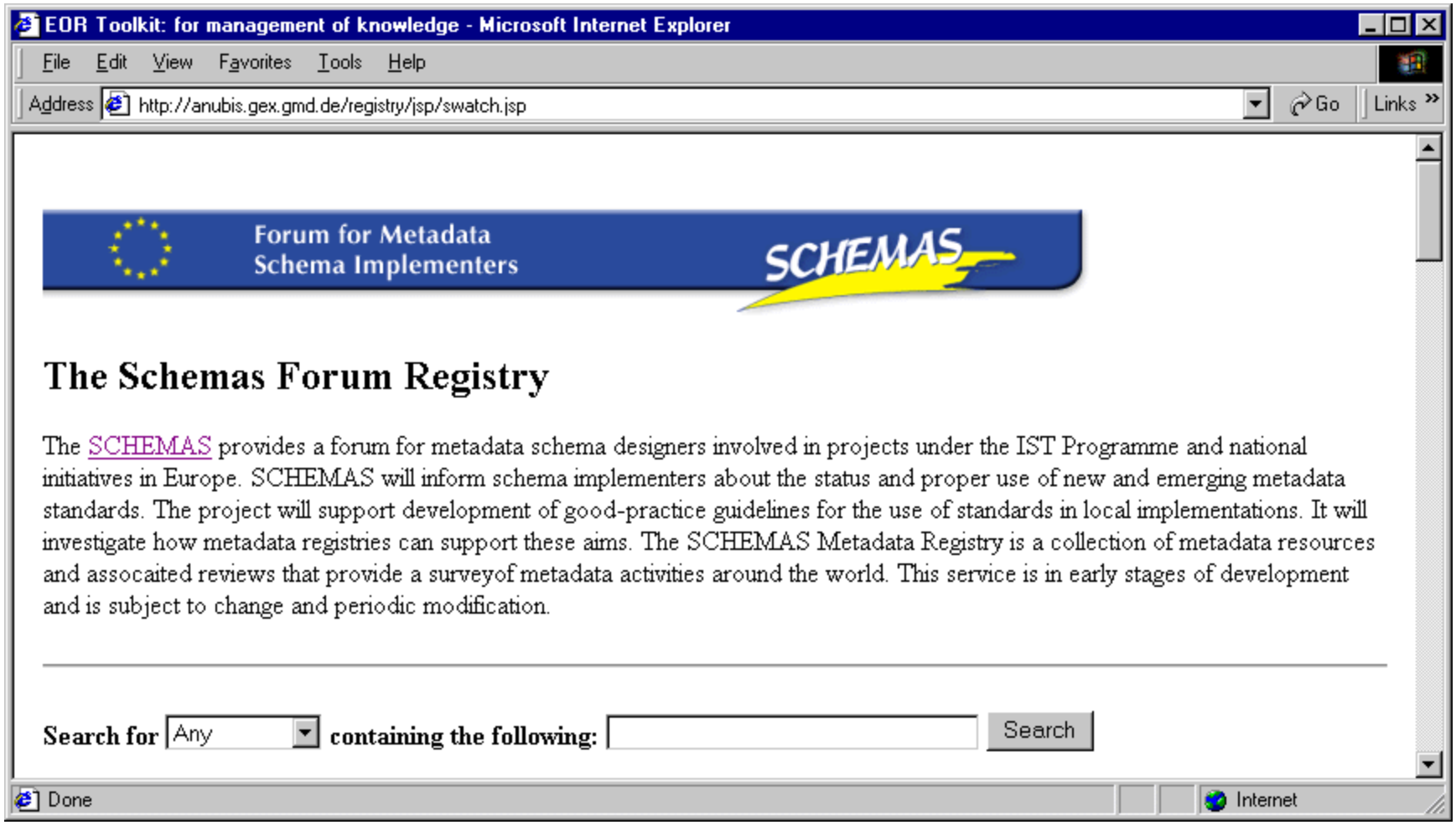
(e.g. Dublin Core standard, LCSH controlled vocabulary)

Application profiles (APs):

Consist of data elements drawn from one or more namespaces, optimised for a particular local application

- need to declare which elements are being used
- may specify dependencies e.g. mandate schemes
- may adapt existing definitions for local purposes
- may declare rules for content (usage guidelines)
- may specify whether an element is mandatory, optional or repeatable

SCHEMAS Registry



EOR Toolkit

- EOR (Extensible Open RDF) Toolkit: (http://eor.dublincore.org - *Eric Miller, OCLC*)
- Harvests RDF schemas from distributed servers on the web
- Creates central index for searching
- Schema browser -hyper-links not only between vocabularies, but between related terms

RDF Schemas

- W3C Candidate Recommendation **(March 2000)**
- Rich, web-based publication format for declaring semantics (XML for exchange)
- Capability to explicitly declare semantic relations between vocabulary terms
- Machine readable, but also defines properties and classes with human readable labels and comments

Registering an AP

For applications with a simple data model :

- submit a URL to an RDF/XML encoding
- fill in template files and submit to registry
- fill in a web form that generates appropriate RDF/XML

For applications with complex data models:

For the moment, point to a web-page with a human-readable schema

Preparations for registration ...

- **which vocabulary terms are new**
- **which elements reference other namespace**
- **honour elements predefined in other namespaces**
- **which elements need a modified definition/label**
- **which encoding schemes are required**
- **refinements of existing vocabulary terms**
- **which elements mandate a scheme**
- **mandatory, optional or repeatable elements**

Example: Renardus

Renardus metadata set (based on v0.1 draft)

Dublin Core element set (dc):

Title, Creator, Description, Subject, Identifier, Language, Type

Dublin Core element qualifiers (dcq):

Alternative (*Title*)

Encoding schemes (dc):

Subject, Type

New elements (rmes):

Country, Full Record URL, SBIG ID

Example: Renardus

New elements, qualifiers and schemes would go into a Renardus namespace schema (rmes)

Renardus application profile schema collects together usage declarations

i.e. re-using elements, qualifiers and schemes from dc, dcq and rmes.

XML namespace mechanism

...used to pull in namespaces ...

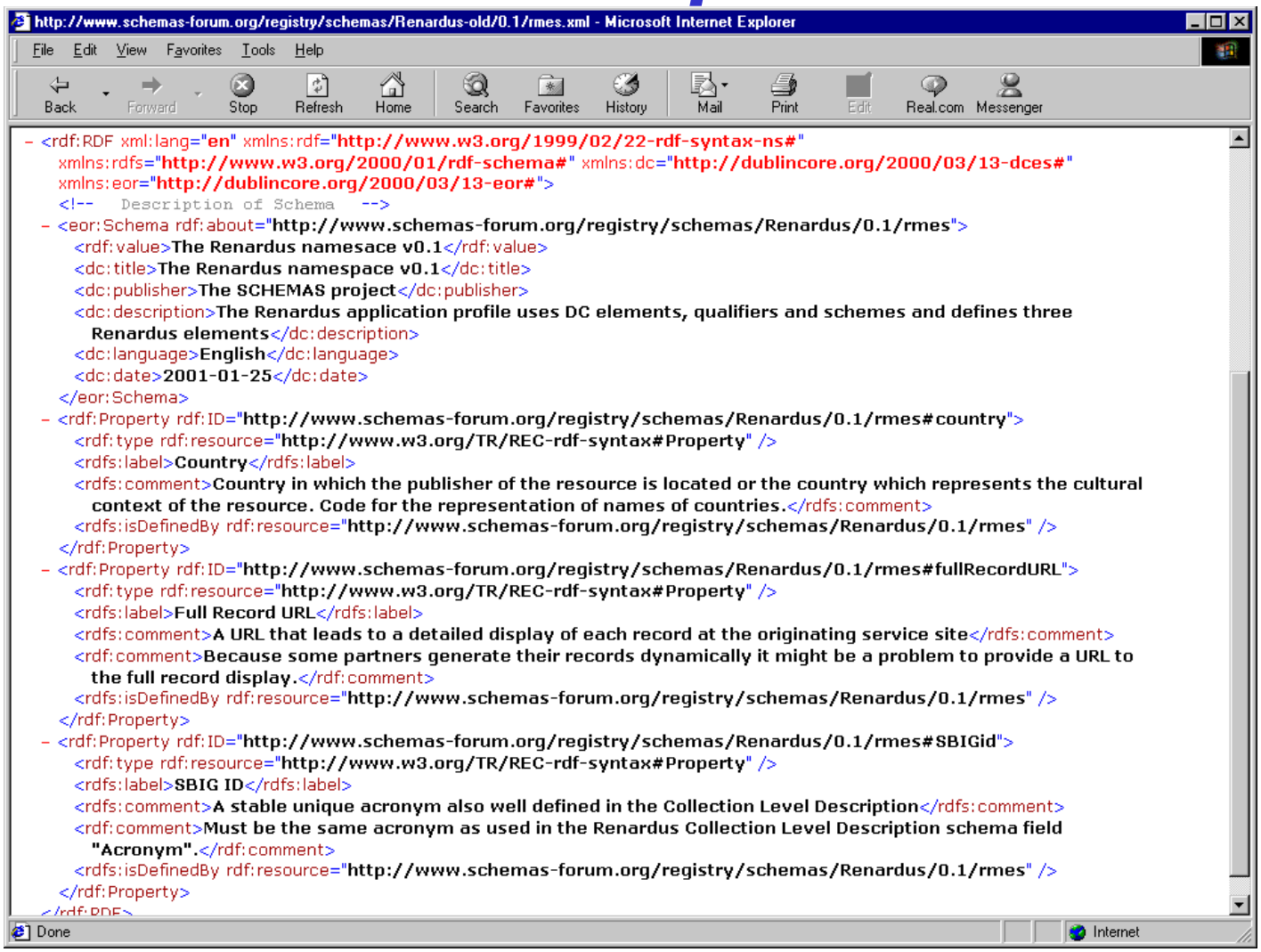
```
<rdf:RDF
  xmlns:rdf = "http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:rdfs = "http://www.w3.org/2000/01/rdf-schema#"
  xmlns:dc = "http://dublincore.org/2000/03/13-dces#"
  xmlns:dcq = "http://dublincore.org/2000/03/13-dcq#”>
```

Example: Renardus namespace

Define a new term and associated semantics:

```
<rdf:Property rdf:ID=
  "http://www.schemas-forum.org/registry/schemas/Renardus/0.1/rmes#country">
  <rdf:type rdf:resource="http://www.w3.org/TR/REC-rdf-syntax#Property"/>
  <rdfs:label>Country</rdfs:label>
  <rdfs:comment>Country in which the publisher of the resource is located or the
     country which represents the cultural context of the resource. Code for
     the representation of names of countries.
  </rdfs:comment>
  <rdfs:isDefinedBy rdf:resource =
        "http://www.schemas-forum.org/registry/schemas/Renardus/0.1/rmes"/>
</rdf:Property>
```

Renardus namespace



Example: DC-Education namespace

Define a new qualifier to a predefined term:

<rdf:Property rdf:ID="**http://dublincore.org/2000/08/22-dced#mediator**">

<rdfs:label>**Mediator**</rdfs:label>

<rdfs:comment>

An entity that mediates access to the resource. Comment: The audience for a resource in the education/training domain are of two basic classes: (1) an utimate beneficiary of the resource (usually a student or trainee), and (2) frequently, an entity that mediates access to the resource (usually a teacher or trainor). The Mediator element refinement represents the second of these two classes.

</rdfs:comment>

<rdfs:**subPropertyOf** rdf:resource=

"**http://dublincore.org/2000/08/22-dced#audience**" />

</rdf:Property>

SCHEMAS AP format

- Still under development
- Machine processible (RDFS)
- Flat structure -can capture a flat list of elements, but not (yet) complex data models
- New terms within the EOR vocabulary:
  - uses in order to declare reuse of predefined vocabulary terms
  - comment in order to provide local usage guidelines

Example: Renardus AP

…declare usage of elements from multiple namespaces:

```
<!-- semantics from the DCMES, dc:title and dcq:alternative-->
<eor:uses
  rdf:resource = "http://dublincore.org/2000/03/13-dces#title" />
<eor:uses
  rdf:resource = "http://dublincore.org/2000/03/13-dcq#alternative" />
```

Example: Renardus AP

…adapt the definition for dc:creator:

Dublin Core namespace:

Creator: An entity primarily responsible for making the content of the resource

Renardus application profile:

<eor:uses>

<rdf:Description about="**http://dublincore.org/2000/03/13-dces#creator**">

<**rdfs:comment**>

Creator(s) are person(s) which are responsible for the intellectual content of the document(s), e.g. webmasters are not creators.

</**rdfs:comment**>

</rdf:Description>

</eor:uses>

Example: Renardus AP

…declare local usage guidelines for an existing element:

```
<eor:uses>
  <rdf:Description rdf:about =
      "http://dublincore.org/2000/03/13-dces#creator">
   <eor:comment>
     If this field is applicable it is strongly recommended to provide the creator.
     For Renardus normalization process it is strongly recommended that last
     name and first name are clearly distinguishable.
   </eor:comment>
  </rdf:Description>
</eor:uses>
```

Example: Renardus AP

…declare reuse of controlled vocabularies:

```
<!-- dc:subject encoding scheme and associated classes -->
  <eor:uses rdf:resource =
        "http://dublincore.org/2000/03/13-dcq#SubjectScheme" />
  <eor:uses rdf:resource="http://dublincore.org/2000/03/13-dcq#LCSH" />
  <eor:uses rdf:resource="http://dublincore.org/2000/03/13-dcq#MESH" />
  <eor:uses rdf:resource="http://dublincore.org/2000/03/13-dcq#DDC" />
  <eor:uses rdf:resource="http://dublincore.org/2000/03/13-dcq#LCC" />
  <eor:uses rdf:resource="http://dublincore.org/2000/03/13-dcq#UDC" />
```

Example: Renardus AP

…mandate a scheme with a specific element:

```
<!-- mandate a DC subject scheme to be used with dc:subject -->
<eor:uses>
  <rdf:Description rdf:about = "http://dublincore.org/2000/03/13-dces#subject">
   <rdfs:range
        rdf:resource="http://dublincore.org/2000/03/13-dcq#SubjectScheme" />
   <rdfs:domain
         rdf:resource="http://dublincore.org/2000/03/13-dces#subject" />
  </rdf:Description>
</eor:uses>
```

Renardus application profile

Conclusions

- Current SCHEMAS AP format meets requirements of simple discovery
- Limitations
  - Difficulties in capturing complex data models
  - Cannot readily model “obligation”, cardinality and encoding schemes (yet)
- Use of RDF to enhance cross-domain interoperability, as well as convergence and harmonisation within specific domains